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April 10, 2013

William Sy
EPA QA Officer
U.S. Environmental Protection Agency
2890 Woodbridge Avenue
Edison, New Jersey 08837

PROJECT: EPA Region 2 RAC2 Contract No.: EP-W-09-002
Work Assignment No.: 045-RICO-A244

DOC CONTROL NO.: 3320-045-01826

SUBJECT: Field Planning Meeting Agenda
Cabo Rojo Groundwater Contamination Site
Remedial Investigation/Feasibility Study
Cabo Rojo, Puerto Rico

Dear Mr. Sy:

CDM Federal Programs Corporation (CDM Smith) is submitting the Field Planning Meeting Documentation for the field activities starting the week of April 8, 2013 at the Cabo Rojo Groundwater Contamination Site, in Cabo Rojo, Puerto Rico. The field planning meeting agenda and signatures of attendees are attached.

If you have any questions regarding this submittal, please contact me at (212) 377-4536.

Very truly yours,

CDM FEDERAL PROGRAMS CORPORATION

A handwritten signature in blue ink, appearing to read "J. Oxford".

Jeniffer Oxford
RAC 2 QA Specialist

Enclosure

cc:

D. Zeno, EPA Region 2
B. MacDonald, CDM Smith
S. Schofield, CDM Smith
J. Litwin, CDM Smith (letter only)

F. Delano, CDM Smith
RAC2 Document Control

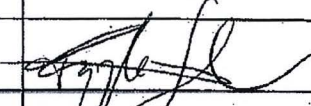
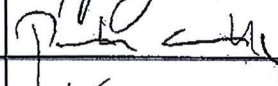
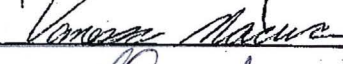
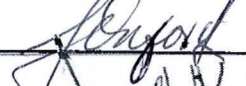

CDM Smith Federal EMPLOYEE MEETING RECORD

Date: 4/9/2013
Time: 4:00 pm

Project # or office location: Cahokya Site
Instructor: Francis Delano

Duration of training: 45 minutes

Topics discussed: Field Planning Meeting - RI/FS

Printed Name	Employee Number	Signature
Francis Delano Collozo	91952	
Patrick Connelly	86543	
Vnessa Macwan	84616	
JENIFFER OXFORD	18449	
JOSE O. TREYES	50907	

Field Planning Meeting: April 9, 2013
Remedial Investigation Field Work
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

Agenda

- I. Major Field Work Elements
- II. Subcontractors
- III. Project Team and Responsibilities
- IV. Key Project Documents
- V. Quality Assurance/Quality Control
- VI. Health and Safety

Attachments

- Field Planning Meeting General Information
- Detailed Contact List

Field Planning Meeting: April 9, 2013
Remedial Investigation Field Work – General Information
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

BACKGROUND

The site is located in the Bajura ward in the municipality of Cabo Rojo in southwestern Puerto Rico. Figures 1 and 2 provide a site location map and a site map, respectively. Cabo Rojo is serviced by the Cabo Rojo Urbano public water system which is maintained by the Puerto Rico Aqueduct and Sewer Authority (PRASA). The system is supplied by six wells (Hacienda La Margarita, Cabo Rojo 1, Cabo Rojo 2, Cabo Rojo 3, Club de Leones, and Ana Maria) and one surface water source which serves an estimated population of 46,911 people. The Ana Maria well acts as an independent system which serves approximately 1,856 people. The Ana Maria and Club de Leones wells are located at Pueblo Norte and Bajura wards, respectively. The Ana Maria and Club de Leones wells are currently active with volatile organic compound (VOC) detections at concentrations below federal maximum contaminant levels (MCLs). The site is currently defined as a groundwater plume with no identified source(s) of contamination. Groundwater samples collected from the Cabo Rojo Urbano public water system from 2004 to 2010 indicated that chlorinated solvents tetrachloroethene (PCE) and trichloroethene (TCE) were detected in several of the wells.

On March 10, 2011, EPA listed the site on the National Priorities List (NPL) because the groundwater contamination plume lies within a designated Wellhead Protection Area and based on the groundwater mitigation pathway score from the Hazardous Ranking System (HRS) document.

OBJECTIVES OF RI FIELD WORK

The objectives of this Remedial Investigation (RI) field event are to define the nature and extent of groundwater and soil contamination and identify and investigate potential source areas (PSAs) (Figure 3). The RI sampling results will generate data to support an RI report, human health risk assessment (HHRA), screening level ecological risk assessment (SLERA), feasibility study (FS), and Record of Decision (ROD).

MAJOR ELEMENTS OF FIELD INVESTIGATION

Continuous Water Level Monitoring (NOTE: Work Completed 4/3/2013)

- Up to 10 pressure transducers will be deployed for approximately two months in existing boreholes to monitor aquifer response to production wells during pumping and non-pumping conditions.

PSA Investigation Soil Gas Screening Data

- Soil gas samples will be collected and analyzed via a field gas chromatograph (GC) at five PSAs (Note: EPA may add a sixth PSA) to determine if VOCs are present in the unsaturated zone. Soil gas results will be utilized to determine if additional investigations should be conducted at each PSA.

PSA Investigation Soil Data (Screening Level and Definitive)

- Soil screening samples will be collected at PSAs; it is assumed that six PSAs will be investigated utilizing a field GC.
- Based on results of the soil screening utilizing the field GC, source area delineation soil samples will be collected at six PSAs for analysis through EPA's Contract Laboratory Program (CLP).

PSA Investigation Groundwater Screening Data

- Concurrent with the soil screening sampling, groundwater screening samples will be collected at the six PSAs and analyzed with the field GC to determine if groundwater VOC contamination is present.

PSA Investigation Surface Water/Sediment Data at Drainage Features

- Surface water and sediment samples will be collected at identified PSAs with drainage features that convey surface waters and/or collect sediment that could be contaminated. NOTE: These samples will be collected toward the end of the field program.

Monitoring Well Installation

- An estimated 14 overburden monitoring wells will be installed in and around the PSA areas.
- An estimated 5 bedrock monitoring wells will be installed to be completed as multiport (FLUTE) wells.

Existing Wells and Multiport Borehole Geophysical and Wireline Fracture Zone Sample Data

- Existing wells and new bedrock wells will have geophysics run for fluid resistivity, temperature, optical and acoustic televiwer, vertical flow static (heat pulse) and pumped (heat pulse). Productive fracture zones will be located for wireline sampling.
- Wireline fracture zone sampling will be conducted at zones identified from the geophysical data or at selected zones in cased wells. VOC data will be used to determine the depths for FLUTE ports in each bedrock monitoring well.

Hydraulic Conductivity Data

- Hydraulic testing will be conducted in the 5 boreholes (to be completed as multiport wells) using FLUTE liners to provide hydraulic conductivity estimates in fractured bedrock.

Groundwater Data

- Round 1 monitoring well samples will be collected at 5 multiport wells (30 ports) and 14 overburden wells for a total of 44 samples. Samples will be analyzed for trace-level Target Compound List (TCL) VOCs through the CLP.
- Synoptic water level data will be collected prior to Round 1 sampling.

LABORATORY ANALYSES

- PSA screening samples (vapor/soil/groundwater) – analyzed in the field via GC with 5% sent to subcontract lab (air – ALS; soil/gw – Shealy)
- PSA soil delineation samples – will be analyzed through the CLP and/or DESA (VOAs only for all samples; ½ of samples for pH, TOC, grain size)
- Fracture zone samples (during geophysics) – subcontract lab (Shealy) for VOAs only, 24 hr TAT
- Surface water/sediment samples – CLP and/or DESA for: water – VOAs, hardness; sediment – VOAs, TOC
- Round 1 monitoring well samples – CLP and/or DESA for: All wells/ports – TCL VOAs; ½ of samples for MEE, Nitrate/Nitrite, TOC, sulfate, sulfide, alkalinity, ammonia, hardness, TKN, TSS, TDS

SCHEDULE

Mobilization	April 8 – 9
PSA Soil Gas Screening	April 10 – 15
PSA Soil and Groundwater Screening	April 16 – May 1
Source Area Soil Delineation Borings	May 2 – May 8
Overburden Well Installation	May 9 – June 3
Borehole Drilling for MPWs	June 4 – June 18
Borehole Geophysics	June 19 – July 1
Wireline Fracture Zone Sampling	July 2 – July 12
Borehole Hydraulic Conductivity Profiling	July 15 – July 19
Multiport Well Installation	September 3 – September 16
Groundwater Sampling	September 24 - 30

PROJECT TEAM/RESPONSIBILITIES

- EPA Remedial Project Manager: Denise Zeno
- CDM Smith Site Manager: Susan Schofield
- CDM Smith Project Geologist: Frances Delano
- CDM Smith RI Task Leader: Mike Valentino/Frances Delano
- Field Team Leader (FTL)/Sample Coordinator – Frances Delano
 - Ensure all field activities conducted in accordance with project documents; oversee QC procedures; coordinate logistics, access notification, and sample schedule; ensure proper operation of field equipment; prepare DSRs and daily tracking sheets; sample management/Scribe and sample paperwork; sample packing and shipping; organize field paperwork; trip reports; field data to database
- Gas Chromatograph Operator – Patrick Connelly
 - Process gas, soil, and groundwater screening samples using Photovac Voyager gas chromatograph; record sample screening results and maintain field logbook; calibrate and document field instruments and perform and document end-of-day calibration checks; maintain field instruments in good working order; assist with sample packing/shipping; assist with sample management as needed; mobilize/demobilize site
 - Samplers – Jose Reyes - Collect samples per the final QAPP for screening level and laboratory analysis; complete sampling sheets; maintain field logbooks; calibrate and document field instruments and perform and document end-of-day calibration checks; maintain field instruments in good working order; collect QA samples as planned (TBs, FBs, Duplicates, MS/MSDs); track IDW; assist with sample packing/shipping; assist with sample management as needed; mobilize/demobilize site

SUBCONTRACTORS

- Drilling – MGV Geotechnical
- IDW – Capitol Environmental Services
- Lab – Shealy (all except air)
- Air Lab - ALS
- Geophysics – Hager-Richter Geoscience, Inc.
- FLUTe installation - FLUTe

QUALITY ASSURANCE/QUALITY CONTROL

Governing Documents

- Cabo Rojo Groundwater Contamination Site RI/FS Final QAPP – January 18, 2013
- CDM Health and Safety Program – May 11, 2011
- Cabo Rojo Health and Safety Plan (HASP) – November 15, 2012
- On site documentation
 - Field Logbooks
 - CLP paperwork (CDM specific)
 - CLP Guidance for Field Samplers – January 2011
 - MSDS – in HASP and onsite
 - Scribe sample management software
 - Calibration forms
 - Low-flow sampling forms
 - Well construction details

QA Samples

- Duplicates – Duplicates will be collected at a rate of 1 per 20 samples for each analysis (see Final QAPP Worksheet #20)
- MS/MSD – MS/MSDs will be collected at a rate of 1 per 20 samples for each analysis excluding VOC*, MEE, and ferrous iron (duplicate) (see Final QAPP Worksheet #20)
- Trip Blanks - 1 trip blank per day per cooler of VOC/MEE samples - VOC/MEE only
- Field Blanks - 1 rinsate blank per day will be collected on a pump and tubing – VOC/MEE only

*- MS/MSD will be required for the VOCs if analysis is assigned to DESA

Field QC

- Daily calibration of gas chromatograph
- Appropriate water quality reading ranges
- Ferrous iron screening and dilutions
- pH checks for preserved samples
- Field logbook checks
- Water level QC checks
- Low flow form checks
- Scribe paperwork and sample shipment QC checks

HEALTH AND SAFETY

- Contaminants of concern: PCE and degradation products (PCE, TCE, *cis*-1,2-DCE, *trans*-1,2-DCE)
- Level D personal protection equipment (PPE). This includes steel-toed boots, safety glasses, a safety vest, and nitrile gloves.

- Daily H&S briefings (mandatory)
- H&S air monitoring with photo ionization detectors (PIDs).
- HASP and MSDS sheets maintained onsite at the project trailer.
- See Cabo Rojo HASP page 11 for hospital location and directions. Copies will be maintained at the project trailer and in each vehicle.
- Hazards:
 - Insects – use proper bug repellent
 - Domestic animals (dogs, bulls, etc.)
 - Heat stress/dehydration
 - Slips/trips/falls
 - Vehicular traffic

LOGISTICS

- Access – Many of the wells are located on private property in a residential area. Property owners have been notified that we will be sampling wells in the area.
- Staging Area – See attached list for location.
- Communication - Decisions regarding field work will be made by personnel in the following order: Field team leader -> Project manager
- Hours – Hours will be 7:00 am until approximately 5:00 pm.
- FedEx – FedEx can pick-up at the site, usually around 5:15 pm. If coolers aren't ready for pick-up by then, we can take them to the closest FedEx shipping center.
- FedEx account number: 1283-75-406.
- The FTL will submit Daily Summary Reports (DSRs) to project manager daily.
- Fielding questions from the media and public – **DO NOT TALK TO THE PUBLIC OR THE MEDIA ABOUT OUR WORK. REFER ANY QUESTIONS TO DENISE ZENO AT EPA.**
- Lodging (below) and Car Rentals (2 vehicles – Frances [SUV], Pat [car]).
- Hotel – Holiday Inn with special CDM “code” to get our discount rate.
- Lodging Rate = \$88/day M&IE Rate = \$90/day
- NOTE: PROJECT WILL NOT PAY FOR WEEKEND USE OF RENTAL VEHICLES (GASOLINE COSTS).
- Charge Numbers
 - PSA investigation – 68991.3320.045.FIZ.SOILZ
 - MW drilling/testing – 68991.3320.045.FIZ.HDROZ
 - Sampling – 68991.3320.045.FIZ.SAMPZ
 - All equipment – 68991.3320.045.FIZ.MBDBZ

Contact List

<u>Name</u>	<u>Affiliation</u>	<u>Phone Number</u>	<u>Cell Number</u>
Denise Zeno	EPA Remedial Project Manager	(212) 637-4319	
Susan Schofield	CDM Smith Site Manager	(787) 722-5428	
Mike Valentino	CDM Smith RI Task Manager	(787) 722-5406	(787) 505-7744
Frances Delano	CDM Smith Field Team Leader/Project Geologist	(787) 722-5142	(787) 452-7602
Patrick Connelly	CDM Smith field personnel	(212) 377-4403	(814) 659-4603
Vanessa Macwan	CDM Smith lab coordinator	(732) 590-4706	
Graham Reifert	CDM Smith Procurement	(703) 968-0900	
Federal Express	Account # 1283-75-406	1-800-go-fedex	

Address List:

CDM Smith staging area	CDM Smith San Juan Office
Pedernales Industrial Park	1225 Ponce de Leon Ave
State Road PR-103	VIG Tower Suite 603
Cabo Rojo, PR	San Juan, PR 00907
	(787) 722-4000
	Fax: (787) 722-6607

Contact List

Cabo Rojo Groundwater Contamination Site

EPA RPM

Denise Zeno
290 Broadway
New York, NY 10007
212-637-4319
Zeno.denise@epa.gov

CDM Smith Site Manager

Susan Schofield
1225 Ponce de Leon Avenue
VIG Tower Suite 603
San Juan, PR 00907
787-722-5428 (office)
203-645-2549 (cell)
schofieldse@cdmsmith.com

Field Team Leader

Frances Delano
1225 Ponce de Leon Avenue
VIG Tower Suite 603
San Juan, PR 00907
787-722-5412 (office)
787-425-7602 (cell)
787-381-0241 (cell)
delanof@cdmsmith.com

Field Trailer

CDM Smith
Pedernales Industrial Park
State Road PR-103, Km 7.35
Lot 7
Cabo Rojo, PR 00623

Subcontractors

Driller

MGV Geotechnical Group
PR-2 KM 35
Bo Ceiba
Vega Baja, PR 00693
Marcus Garcia (Cell: 939-717-5487)
Leandro Addarich (cell: 787-600-1556)
787-354-5646 (office)
mgarcia@mgvgeo.com
laddarich@mgvgeo.com

IDW

Capitol Environmental Services
200 Biddle Avenue Suite 205
Newark, DE 19702
Eric Snyder
ESnyder@Capitalenv.com

Laboratory

Shealy Environmental Services
106 Vantage Point Drive
West Columbia, SC 29172
Contact: Nisreen Saikaly
nsaikaly@shealylab.com
Direct 803-227-2704
Main 803-791-9700 x106
Fax 803-791-9111

Air Laboratory (lower tier sub to Shealy)

CAS/ALS
2655 Park Center Drive Suite A
Simi Valley, CA 93065
Contact: Nicole Pannone
Nicole.Pannone@alsglobal.com
Technical Sales Representative
MOBILE 949-910-0409
LABORATORY MAIN 805-526-7161
LABORATORY FAX 805-526-7270

Other Emergency Numbers (See Page 10 HASP)

Police: 911
Fire Department: 911

Hospital – See HASP page 11

Table 3-1
Potential Source Area Reconnaissance
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

No.	Potential Source Area Location	Reconnaissance
1	Extasy Q Prints	Completed by EPA
2	Cabo Rojo Professional Dry Cleaners	Completed by EPA
3	D'Elegant Fantastic Dry Cleaners	Completed by EPA
4	Serrano II Dry Cleaners	Completed by EPA
5	PRIDCO East	Partially Completed
6	PRIDCO West	Yes
7	RETO Plant	Yes
8	Raul Lugo	Yes
9	Unfinished Strip Mall	Yes
10	TBD 1	Yes

Abbreviations:

EPA = Environmental Protection Agency

PRIDCO = Puerto Rico Industrial Development Company

TBD = to be determined

Table 3-2
Existing Well Evaluation
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

No.	Well Name	Well Type	Geophysics¹	Analyses (CLP)²	Samples
1	Ana Maria	Supply Well	Yes	TCL VOCs	6
2	Club de Leones	Supply Well	Yes	TCL VOCs	6
3	Terminal de Carros Publicos	Supply Well	Yes	TCL VOCs	6
4	Hacienda Margarita ³	Supply Well	No	None planned	NA
Total Samples					18

¹ Geophysical logs will include natural gamma, specific conductance, temperature, caliper, acoustic televiewer, and heat pulse flow meter.

² CDM Smith assumes that these samples will be analyzed by CLP (with two-week turn-around time for preliminary results).

³ Since no contamination was identified in recent sampling of this well, it will not be tested.

Abbreviations:

CLP = Contract Laboratory Program

NA = not applicable

TCL = Target Compound List

VOC = volatile organic compound

Table 3-3
Proposed Multiport Monitoring Wells
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

Well Name	Location	Geophysics ¹	Wireline Sampling ^{2, 3}	Round 1 Sampling	
				(CLP)	(CLP/DESA) ^{4, 5}
Multiport 1	between CRPDC, EQP, and Ana Maria	Yes	TCL VOCs	TCL VOCs	MNA parameters
Multiport 2	PRIDCO West	Yes	TCL VOCs	TCL VOCs	MNA parameters
Multiport 3	PRIDCO East	Yes	TCL VOCs	TCL VOCs	MNA parameters
Multiport 4	between Serrano II and PRASA well	Yes	TCL VOCs	TCL VOCs	MNA parameters
Multiport 5	Background south of PRIDCO	Yes	TCL VOCs	TCL VOCs	MNA parameters
Total Samples			30	30	15

¹ Geophysical logs will include natural gamma, specific conductance, temperature, caliper, acoustic televiewer, and heat pulse flow meter.

² CDM Smith assumes that wireline samples will be analyzed by a local NELAP lab with 48 hours turn-around time.

³ CDM Smith assumes that one duplicate and one MS/MSD will be collected from each well.

⁴ MNA parameters include: TSS, TDS, alkalinity, ammonia, hardness, TKN, chloride, MEE, nitrate/nitrite, sulfate, sulfide, TOC.

⁵ MNA parameters will be collected from 3 ports from each well, for a total of 24 samples.

Abbreviations

CLP Contract Laboratory Program
CRPDC Cabo Rojo Professional Dry Cleaners
DESA Division of Environmental Science and Assessment
EQP Extasy Q Prints
MEE methane/ethane/ethene
MNA Monitored natural attenuation
MS/MSD matrix spike/matric spike duplicate
NELAP National Environmental Laboratory Accreditation Program

PRIDCO Puerto Rico Industrial Development Company
TCL Target Compound List
TDS total dissolved solids
TKN total Kjeldahl nitrogen
TOC total organic carbon
TSS total suspended solids
VOC volatile organic compound

Table 3-4
Potential Source Area Soil Vapor Screening
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

No.	PSA Location ¹	Reconnaissance	Soil Vapor	Analytical (field GC) ²	Analytical (local laboratory) ^{3,4}
1	Extasy Q Prints	Complete	Complete	None	None
2	Cabo Rojo Professional Dry Cleaners	Complete	Complete	None	None
3	D'Elegant Fantastic Dry Cleaners	Complete	Complete	None	None
4	Serrano II Dry Cleaners	Complete	Complete	None	None
5	PRIDCO East	Yes	10 locations, 1 sample each	PCE, TCE and DCE	TCL VOCs
6	PRIDCO West	Yes	20 locations, 1 sample each	PCE, TCE and DCE	TCL VOCs
7	RETO Plant	Yes	10 locations, 1 sample each	PCE, TCE and DCE	TCL VOCs
8	Raul Lugo	Yes	10 locations, 1 sample each	PCE, TCE and DCE	TCL VOCs
9	Unfinished Strip Mall	Yes	10 locations, 1 sample each	PCE, TCE and DCE	TCL VOCs
10	TBD A	Yes	None (eliminated via reconnaissance)	None	None
	Total Samples			60	5

¹ CDM Smith assumes 5 PSAs will require soil vapor screening to evaluate contamination. The actual locations will be determined based on PSA reconnaissance.

² CDM Smith assumes 1 duplicate per property.

³ CDM Smith assumes at least 1 sample per property.

⁴ CDM Smith assumes that these samples will be analyzed by a local NELAP certified laboratory on 48 hour turn-around time, except the first PSA, which will be analyzed with 24 hour turn-around time.

Abbreviations:

DCE = cis-1,2-dichloroethene

GC = gas chromatograph

NELAP = National Environmental Laboratory Accreditation Program

PCE = tetrachloroethene

PSA = potential source area

PRIDCO = Puerto Rico Industrial Development Company

TBD = to be determined

TCE = trichloroethene

TCL = Target Compound List

VOC = volatile organic compound

Table 3-5
Potential Source Area Soil Screening
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

No.	PSA Location ¹	Soil Screening	Analytical (field GC) ²	Analytical (Local laboratory) ^{3,4}
1	Extasy Q Prints	10 borings, 3 samples per boring	PCE, TCE and DCE	TCL VOCs
2	Cabo Rojo Professional Dry Cleaners	10 borings, 3 samples per boring	PCE, TCE and DCE	TCL VOCs
3	D'Elegant Fantastic Dry Cleaners	10 borings, 3 samples per boring	PCE, TCE and DCE	TCL VOCs
4	Serrano II Dry Cleaners	10 borings, 3 samples per boring	PCE, TCE and DCE	TCL VOCs
5	PRIDCO East	10 borings, 3 samples per boring	PCE, TCE and DCE	TCL VOCs
6	PRIDCO West	20 borings, 3 samples per boring	PCE, TCE and DCE	TCL VOCs
7	RETO Plant	None (eliminated via soil vapor screening)	None	None
8	Raul Lugo	None (eliminated via soil vapor screening)	None	None
9	Unfinished Strip Mall	None (eliminated via soil vapor screening)	None	None
10	TBD A	Eliminated via reconnaissance	None	None
	Total Samples		210	11

¹ CDM Smith assumes 6 PSAs will require soil screening to evaluate soil contamination. The actual locations will be determined based on the sampling results.

² CDM Smith assumes duplicate at five percent.

³ CDM Smith assumes five percent of the GC samples will be analyzed by the local laboratory.

⁴ CDM Smith assumes these samples will be analyzed by a local NELAP certified laboratory on 48 hour turn-around time.

Abbreviations:

DCE = dichloroethene

GC = gas chromatograph

NELAP = National Environmental Laboratory Accreditation Program

PSA = potential source area

PCE = tetrachloroethene

PRIDCO = Puerto Rico Industrial Development Company

TBD = to be determined

TCE = trichloroethene

TCL = Target Compound List

VOC = volatile organic compound

Table 3-6
Potential Source Area Groundwater Screening
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

No.	PSA Location ¹	Groundwater Screening	Analytical (field GC) ²	Analytical (Local laboratory) ^{3,4}
1	Extasy Q Prints	10 borings, 2 samples per boring	PCE, TCE and DCE	TCL VOCs
2	Cabo Rojo Professional Dry Cleaners	10 borings, 2 samples per boring	PCE, TCE and DCE	TCL VOCs
3	D'Elegant Fantastic Dry Cleaners	10 borings, 2 samples per boring	PCE, TCE and DCE	TCL VOCs
4	Serrano II Dry Cleaners	10 borings, 2 samples per boring	PCE, TCE and DCE	TCL VOCs
5	PRIDCO East	10 borings, 2 samples per boring	PCE, TCE and DCE	TCL VOCs
6	PRIDCO West	20 borings, 2 samples per boring	PCE, TCE and DCE	TCL VOCs
7	RETO Plant	None (eliminated via soil vapor screening)	None	None
8	Raul Lugo	None (eliminated via soil vapor screening)	None	None
9	Unfinished Strip Mall	None (eliminated via soil vapor screening)	None	None
10	TBD A	Eliminated via reconnaissance	None	None
	Total Samples		140	7

¹ CDM Smith assumes 6 PSAs will require groundwater screening to evaluate the impact of contaminated soil on the groundwater. The actual locations will be determined based on the vapor sampling results.

² CDM Smith assumes duplicates at a rate of five percent.

³ CDM Smith assumes five percent of GC samples will be sent for laboratory analysis.

⁴ CDM Smith assumes that these samples will be analyzed by a local NELAP certified laboratory on 48 hour turn-around time.

Abbreviations:

DCE = dichloroethene

GC = gas chromatograph

NELAP = National Environmental Laboratory Accreditation Program

PCE = tetrachloroethene

PSA = potential source area

PRIDCO = Puerto Rico Industrial Development Company

TBD = to be determined

TCE = trichloroethene

TCL = Target Compound List

VOC = volatile organic compound

Table 3-7
Potential Source Area Soil Delineation Samples
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

No.	PSA Location¹	Soil	Analytical (CLP/DESA)²
1	Extasy Q Prints	6 borings, 2 samples per boring	TCL VOCs, soil moisture, pH, TOC, grain size
2	Cabo Rojo Professional Dry Cleaners	6 borings, 2 samples per boring	TCL VOCs, soil moisture, pH, TOC, grain size
3	D'Elegant Fantastic Dry Cleaners	6 borings, 2 samples per boring	TCL VOCs, soil moisture, pH, TOC, grain size
4	Serrano II Dry Cleaners	6 borings, 2 samples per boring	TCL VOCs, soil moisture, pH, TOC, grain size
5	PRIDCO East	6 borings, 2 samples per boring	TCL VOCs, soil moisture, pH, TOC, grain size
6	PRIDCO West	6 borings, 2 samples per boring	TCL VOCs, soil moisture, pH, TOC, grain size
7	RETO Plant	None (eliminated via soil vapor screening)	None
8	Raul Lugo	None (eliminated via soil vapor screening)	None
9	Unfinished Strip Mall	None (eliminated via soil vapor screening)	None
10	TBD A	Eliminated via reconnaissance	None
Total Samples			72 TCL and moisture/36 pH, TOC, and GS

¹ CDM Smith assumes 6 PSAs will require soil sampling to delineate contamination. The actual locations will be determined based on the sampling results.

² CDM Smith assumes that 1 sample per boring will be analyzed for soil moisture (as part of the CLP TCL VOC analyses), pH, TOC, and grain size.

Abbreviations:

CLP = Contract Laboratory Program

GS = grain size

PSA = potential source area

PRIDCO = Puerto Rico Industrial Development Company

TBD = to be determined

TOC = total organic carbon

TCL = Target Compound List

VOC = volatile organic compound

Table 3-8
Potential Source Area Overburden Monitoring Wells
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

No.	PSA Location ¹	Groundwater	Analytical - Round 1 (CLP/DESA) ²
1	Extasy Q Prints	2 overburden wells	TCL VOCs, MNA parameters
2	Cabo Rojo Professional Dry Cleaners	2 overburden wells	TCL VOCs, MNA parameters
3	D'Elegant Fantastic Dry Cleaners	2 overburden wells	TCL VOCs, MNA parameters
4	Serrano II Dry Cleaners	2 overburden wells	TCL VOCs, MNA parameters
5	PRIDCO East	3 overburden wells	TCL VOCs, MNA parameters
6	PRIDCO West	3 overburden wells	TCL VOCs, MNA parameters
7	RETO Plant	None (eliminated via soil vapor screening)	None
8	Raul Lugo	None (eliminated via soil vapor screening)	None
9	Unfinished Strip Mall	None (eliminated via soil vapor screening)	None
10	TBD A	Eliminated via reconnaissance	None
	Total Samples		14 TCL VOCs/5 MNA parameters

¹ CDM Smith assumes 6 PSAs will require overburden monitoring wells. The actual locations will be determined based on the sampling results.

² MNA parameters will be collected from 5 overburden wells and will include: TSS, TDS, alkalinity, ammonia, hardness, TKN, chloride, MEE, nitrate/nitrite, sulfate, sulfide, TOC

Abbreviations:

CLP = Contract Laboratory Program
MEE = methane/ethene/ethane
MNA = monitored natural attenuation
PRIDCO = Puerto Rico Industrial Development Company
PSA = potential source area
TCL = Target Compound List

TDS = total dissolved solids
TKN = total Kjeldahl nitrogen
TOC = total organic carbon
TSS = total suspended solids
VOC = volatile organic compound

Table 3-9
Potential Source Area Drainage Feature Sampling
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

No.	PSA Location ¹	Surface Water	Analytical (CLP/DESA)	Sediment	Analytical (CLP/DESA)
1	Extasy Q Prints	2 samples	TCL VOCs and hardness	2 samples	TCL VOCs and TOC
2	Cabo Rojo Professional Dry Cleaners	2 samples	TCL VOCs and hardness	2 samples	TCL VOCs and TOC
3	D'Elegant Fantastic Dry Cleaners	2 samples	TCL VOCs and hardness	2 samples	TCL VOCs and TOC
4	Serrano II Dry Cleaners	2 samples	TCL VOCs and hardness	2 samples	TCL VOCs and TOC
5	PRIDCO East	3 samples	TCL VOCs and hardness	3 samples	TCL VOCs and TOC
6	PRIDCO West	3 samples	TCL VOCs and hardness	3 samples	TCL VOCs and TOC
7	RETO Plant	None (eliminated via soil vapor screening)	None	None	None
8	Raul Lugo	None (eliminated via soil vapor screening)	None	None	None
9	Unfinished Strip Mall	None (eliminated via soil vapor screening)	None	None	None
10	TBD A	Eliminated via reconnaissance	None	None	None
	Total Samples		14	14	14

¹ CDM Smith assume 6 PSAs will require surface water and sediment sampling to evaluate contamination. The actual locations will be determined based on PSA reconnaissance.

Abbreviations:

CLP = Contract Laboratory Program

PRIDCO = Puerto Rico Industrial Developm

PSA = potential source area

TBD = to be determined

TCL = Target Compound List

TOC = total organic carbon

VOC = volatile organic compound

Table 3-10
Analytical Summary
Cabo Rojo Groundwater Contamination Site
Cabo Rojo, Puerto Rico

Sample Type	CLP/DESA Analysis																	Non-RAS	Field Screening							
	TCL VOC ¹	Soil Moisture ²	Chloride	Nitrate/nitrite	Sulfate	Sulfide	TOC (aqueous)	TSS	TDS	Alkalinity	Ammonia	TOC (soil)	Hardness	pH	Grain size	MEE	TKN	TCL VOCs ³	Field GC ⁴	Ferrous Iron	pH	ORP	Temperature	Turbidity	SpC	DO
Existing Well Sampling	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GROUNDWATER	18																									
Duplicates	1																									
MS/MSD	1																									
Field Blank	2																									
Trip Blank	8																									
PSA Soil Vapor Screening	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	63	0	0	0	0	0	0	0
SOIL VAPOR																		7	60							
Duplicates																		1	3							
MS/MSD																		1								
Field Blank																		1								
Trip Blank																										
PSA Soil Screening	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	221	0	0	0	0	0	0	0
SOIL																		11	210							
Duplicates																		1	11							
MS/MSD																		1								
Field Blank																		1								
Trip Blank																										
PSA Groundwater Screening	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	147	0	0	0	0	0	0	0
GROUNDWATER																		7	140							
Duplicates																		1	7							
MS/MSD																		1								
Field Blank																		1								
Trip Blank																		1								
PSA Soil Delineation Sampling	90	38	0	0	0	0	0	0	0	0	0	38	0	38	38	0	0	0	0	0	0	0	0	0	0	0
SOIL	72	36										36		36	36											
Duplicates	3	2										2		2	2											
MS/MSD	3																									
Field Blank	12																									
Trip Blank																										
Multiport Wireline Sampling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0	0	0	0	0	0	0	0
GROUNDWATER																		30								
Duplicates																		2								
MS/MSD																		2								
Field Blank																		3								
Trip Blank																		9								
Well Sampling - Round 1 ⁵	61	0	22	22	22	22	22	22	22	22	22	0	22	0	0	22	22	0	0	17	44	44	44	44	44	44
GROUNDWATER	44		20	20	20	20	20	20	20	20	20		20			20	20			15	44	44	44	44	44	44
Duplicates	3		1	1	1	1	1	1	1	1	1		1			1	1			1						
MS/MSD	3		1	1	1	1	1	1	1	1	1		1			1	1			1						
Field Blank	6																									
Trip Blank	5																									
Drainage Features Sampling	22	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0
SURFACE WATER	14												14													
Duplicates	1												2													
MS/MSD	1																									
Field Blank	3																									
Trip Blank	3																									
Drainage Features Sampling	19	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEDIMENT	14											14														
Duplicates	1											2														
MS/MSD	1																									
Field Blank	3																									
Trip Blank	0																									
	222	38	22	22	22	22	22	22	22	22	22	54	38	38	38	22	22	81	431	17	44	44	44	44	44	44

Notes:

¹ SOM01.2

² will be part of CLP TCL analysis

³ 48 hour turn-around time

⁴ tetrachloroethene (PCE), trichloroethene (TCE) and dichloroethene (DCE)

⁵ Round 1 includes 30 ports and 14 single screen wells.

Abbreviations:

DO = dissolved oxygen

GC = gas chromatograph

MEE = methane/ethane/ethene

MS/MSD = matrix spike/matrix spike duplicate

ORP = oxidation reduction potential

PSA = potential source area

SpC = specific conductivity

TCL = Target Compound List

TDS = total dissolved solids

TKN = total Kjeldahl nitrogen

TOC = total organic carbon

TSS = total suspended solids

VOC = volatile organic compound